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Public Comments
Glyphosate NSRL
OEHHA
https://oehha.ca.gov/comments

State of California
Sacramento, California
June 21, 2017

Food Democracy Now! Urges California to Protect the State's Children, Citizens, Farmers and Farmworkers from Carcinogenic and Reproductive Harms of Glyphosate

Dear Members of the Commission,

As the Executive Director of Food Democracy Now!, a non-profit research and public policy organization of more 650,000 farmer and citizen members across the United States that work to promote progressive reforms of modern agricultural practices, I am writing today to provide comments in support of a revised and much lower No Significant Risk Level (NSRL) for the commonly used agricultural herbicide glyphosate than has been proposed by the California Office of Environmental Health Hazard Assessment (OEHHA).

While we greatly appreciate that OEHHA has worked to create a cancer-based No Significant Risk Level (NSRL) to meet requirements listed under the state's Proposition 65, we believe that serious risks to human health, including cancer and likely reproductive problems have been significantly underreported for decades by Monsanto, the glyphosate herbicide's original patent holder, which has led to OEHHA's request for the state's level of 1,100 micrograms per day to be much too high to protect human health, especially that of young and unborn children.

Since children are a much more vulnerable to toxic chemicals than adults and the most recent independent peer reviewed literature has shown that glyphosate can be more harmful than previously considered, **Food Democracy Now! recommends**

OEHHA implement an NSRL of 0.1 micrograms/day for glyphosate in California.

The current proposed No Significant Risk Level (NSRL) is calculated based on the results of a single toxicity study using laboratory animals exposed to high levels of glyphosate although potential carcinogenic effects of glyphosate have been identified in human populations exposed to much lower levels. Epidemiological studies reviewed by IARC suggest glyphosate carcinogenic effects in populations of farmers occupationally exposed to glyphosate-based herbicides.

The recent US EPA glyphosate issues paper states that "In residential/non-occupational settings, children 1-2 years old are considered the most highly exposed subpopulation with an estimate of potential combined exposure of 0.47 mg/kg/day. The estimated maximum potential exposure for occupational workers is 7 mg/kg/day. The estimate of exposure children and occupational workers is at least 2,000-fold and 140-fold lower, respectively, than the doses (~1000 mg/kg/day) where increases in tumor incidences were typically observed in the rodent studies."

The studies showing glyphosate carcinogenic effects in human populations cannot be ignored. Before a high NSRL is considered, these studies should be replicated and extended, including glyphosate measurements in urine to definitely assess the link between glyphosate use and cancer development in prospective studies. In the meantime, they should be used in order to apply a precautionary approach and calculate a more realistic NSRL.

Why is glyphosate a problem for human health - Carcinogenicity?

In 2015 the World Health Organization's International Agency for Research on Cancer (IARC) declared that glyphosate is "probably carcinogenic to humans". In their public statement, the IARC stated that its conclusion on "limited evidence of carcinogenicity in humans for non-Hodgkin lymphoma and lung cancer" and "convincing evidence" that glyphosate "can cause cancer in laboratory animals".

Human epidemiological studies confirm cancer risk

Despite repeated claims of glyphosate's safety for human exposure, multiple independent studies in human populations have found an association between Roundup exposure and two types of blood cancer:

1. An epidemiological study of pesticide applicators in the USA found that exposure to glyphosate herbicide was associated with higher incidence of multiple myeloma.

2. Epidemiological studies conducted in Sweden found that exposure to glyphosate herbicide was linked with a higher incidence of non-Hodgkin's lymphoma. A systematic review of the literature published in 2014 concluded that there was an

association between exposure to glyphosate herbicides and non-Hodgkin's lymphoma.

Lab studies showing the carcinogenic potential of glyphosate include the following:
All of the following studies must be reviewed using modern scientific knowledge regarding endocrine disruption at low dose – real-life exposure levels:

https://www.ncbi.nlm.nih.gov/pubmed/12765238
https://www.ncbi.nlm.nih.gov/pubmed/20045496
https://www.ncbi.nlm.nih.gov/pubmed/23756170

In addition to these concerning independent peer reviewed studies, last fall Food Democracy Now! and the Detox Project published a review of the scientific literature titled "Glyphosate Unsafe on Any Plate" (see attached) that contained the results found by a leading food safety testing laboratory which detected extremely high levels of the pesticide residue glyphosate in popular American food products.

The analysis was performed by Anresco Laboratories in San Francisco, California, an FDA-registered facility that has performed food safety testing since 1943. This laboratory study, commissioned by our organizations, measured glyphosate quantities as high as 1125.4 ppb in General Mill's *Cheerios,* the most popular cereal, above the recommended NSRL level which the commission is considering.

Furthermore, scientific evidence had indicated that harm to human health can begin at ultra-low levels of glyphosate at 0.1 parts per billion, or at 1/10,000th of the level which the commission would permit.

While the US EPA has established 700 ppb of glyphosate in drinking water as "safe", and the daily acceptable intake (ADI) set by the US government is currently 1.75 parts per million (ppm) per kilogram of bodyweight per day, (equivalent to 1750 ppb), a two-year study on rats published in 2015 found that just .05 ppb of glyphosate changed the function of more than 4,000 genes. It would behoove the commission to pay attention to any and all studies which suggest adverse human health effects at such miniscule levels.

This amount is 1/20,000th of the NSRL recommendation and found steatohepatosis, a type of fatty liver disease, which predisposes to liver cancer, in rats following 2-year consumption of Roundup at a glyphosate equivalent dose of only 4 nanograms per kg per day.

This amount of glyphosate ingested by these rats is appropriately 4000 times lower in terms of glyphosate consumed than what is typically ingested, on average, by Americans based on levels found in urine in surveys. To date this study is the only one of its type

providing a direct causative link between an environmentally relevant dose of Roundup and a serious disease.

Thus based on this data a safe level of daily glyphosate ingestion is not known and the level of daily ingestion suggested by CA regulators of 1100ug/day is too high, especially given that the amount consumed on a per kg basis will be much higher for a child than an adult. With this supporting evidence, **Food Democracy Now! recommends OEHHA implement an NSRL of 0.1 micrograms/day for glyphosate in California.**

In addition, I urge you to review the findings of our study (attached) and to carefully consider that the wide-spread presence of glyphosate in our food, together with the possibility that ANY exposure to glyphosate could have long-term adverse irreversible effects on human health, requires rejecting the NSRL recommendation, and furthermore demands phasing out all products which contain glyphosate, pending a strict regime of independent, peer-reviewed longitudinal testing of the glyphosate's effect on human health.

For more than four decades, Monsanto has claimed that glyphosate did not bioaccumulate in animals or humans in any significant way, but a review of a 2004 joint report on pesticide residues in food by the United Nations Food and Agriculture Program and the World Health Organization determined that glyphosate does accumulate in the bones of lab animals.

"Analysis of individual tissues demonstrated that bone contained the highest concentration of [14C] glyphosate equivalents (0.3–31ppm). The remaining tissues contained glyphosate equivalents at a concentration of between 0.0003 and 11 ppm. In the bone and some highly perfused tissues, levels were statistically higher in males than in females."
3 —PESTICIDE RESIDUES IN FOOD, JOINT FAO/WHO MEETING 200

Uren Webster TM, Santos EM. Global transcriptomic profiling demonstrates induction of oxidative stress and of compensatory cellular stress responses in brown trout exposed to glyphosate and Roundup. BMC Genomics 2015 Jan 31;16:32. PMID: 25636363 http://bmcgenomics.biomedcentral.com/articles/10.1186/s12864-015-1254-5

The question is, since non-Hodgkin's lymphoma is a cancer that starts in cells called lymphocytes, which are part of the body's immune system and can be found in bone marrow, what impact does this daily exposure to increasing levels of glyphosate residues have on the American public, which relies on a diet of processed foods, more than 75 percent of which contain genetically engineered ingredients that were sprayed with high levels of Roundup, Monsanto's flagship weedkiller?

Despite Monsanto's repeated claims of Roundup's safety, the company was successfully sued by the New York state's attorney general in 1996 over its

use of "false and misleading advertising," which forced the company to stop claiming its weedkiller was "biodegradable" and to halt ads that claimed Roundup was "safer than table salt" and "practically non-toxic".

A similar lawsuit was filed in France that resulted in a former chairman of Monsanto Agriculture France being "found guilty of false advertising for presenting Roundup as biodegradable and claiming that it left the soil clean after use" and a small fine for Monsanto's French distribution.

Based on the above studies and based on the precautionary principle we suggest an NSRL of 0.1 micrograms/day for glyphosate in California.

Thank you for your careful consideration of our appeal.

Sincerely,

David Murphy,
Executive Director
Food Democracy Now!

For your review: "Glyphosate Unsafe on Any Plate", Food Democracy Now!, the Detox Project, 2016.

https://s3.amazonaws.com/media.fooddemocracynow.org/images/FDN_Glyphosate_FoodTesting_Report_p2016.pdf